

October 6, 2006

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## Livestock Committee

The National Organic Standards Board

c/o Valerie Frances

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*Submitted electronically to Valerie.Frances@usda.gov*

To the Members of the Livestock Committee of the National Organic Standards Board:

On behalf of The Humane Society of the United States and our nearly 10 million members and constituents, I thank you for the opportunity to submit comments addressing the Interim Final Report of the Aquaculture Working Group.

## *Species or Production Method Specific Standards*

*The Livestock Committee invites input relative to identification of and justification for the production systems or categories of species that should be considered separately. Further, the committee invites input on the identification of the specific sections of the Aquaculture Working Group Interim Final Report that may require species or production method specific standards.*

Since producers' views and interpretations may vary, particularly when addressing health care (§205.253) and living conditions (§205.254), the Aquaculture Working Group Interim Final Report should more carefully define "maintenance of healthy water rearing conditions...within acceptable ranges" (§205.253(a)(3)) and indicate how to gauge both the stress and overall welfare of the animal (§205.253(a)(5-6), §205.254(a-b)).

In the absence of species-specific standards, the National Organic Standards Board should recommend standards under which producers must become intimately familiar with signs of stress and diminished welfare. One suggested method is to lay out daily timetables for producers to survey the animals for signs of stress and welfare, including observations during and after feeding, during and after grading or handling of fish, and during and after transport. Producers should then be required to take appropriate and immediate action with the first signs of diminished welfare.

Further, producers should be able to demonstrate their abilities to recognize problems in rearing and welfare, as well as possess knowledge of the appropriate actions to alleviate these issues.<sup>1</sup> Ultimately, responsible management of any aquaculture system lies with the producer, and, as such, steps should be taken to ensure the producer is knowledgeable about the species, rearing conditions, and challenges the animals face.<sup>2</sup>

If species-specific standards are not developed, at a minimum, requirements should be established for monitoring aquaculture facilities and systems, and a table of optimum conditions for commonly reared species should be provided to producers and managers. Conditions addressed in the table should include environmental conditions, water temperature ranges, dissolved oxygen, carbon dioxide, ammonia, limits on heavy metals, salinity, pH, stocking densities, and water flow rate.<sup>3,4,5,6,7</sup>

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## ***Impact on the Environment***

*The Livestock Committee invites input from the organic community, consumers, aquaculture professionals, environmentalists and other interested parties as to how organic aquaculture will meet the requirement of maintaining or improving the environment, including the use of integrated net pen systems as proposed in the Aquaculture Working Group Interim Final Report.*

Net pens can harm water quality and threaten wild aquatic populations. Waste, including feces and uneaten feed, can reduce biodiversity by damaging bottom-dwelling plants and animals.<sup>8,9</sup> Further, concentrating large numbers of fish in open net pens can lead to outbreaks of disease and parasites<sup>10</sup> that are then transmitted to wild fish, though this can be reduced by limiting the stocking density of fish in net pens.<sup>11</sup>

## ***Differences between Organic and Conventional Aquaculture Standards***

*Comments from organic consumers and other stakeholders on their expectations and explanations of the differences between organic aquaculture and conventional aquaculture methods and products are invited.*

Among the many differences between conventional and organic animal agriculture, organic requirements tend to place more emphasis on animal welfare. As the Board's own Policy and Procedures Manual states, organic livestock production is based on "the development of a harmonious relationship between land, plants, and livestock, and respect for the physiological and behavioral needs of livestock."<sup>12</sup>

Similarly, animal welfare should be paramount in the development of organic aquaculture standards. As such, the following changes should be made to §205.259 of the Aquaculture Working Group's Interim Final Report:

- §205.259(c): add "(6) duration of pre-slaughter starvation" — Although starvation is used to empty the gut contents prior to slaughter, this period should be kept to a minimum.<sup>13</sup>
- §205.259(e): replace "a fasting period" with "pre-slaughter starvation" — The term "fasting" suggests a choice on the part of the animal.
- §205.259(f): amend to read "Just prior to slaughter, finfish must be *stunned* by a method that renders them instantly insentient before or immediately after they are taken from the water, *with unconsciousness lasting until death.*"
- §205.259(f)(1)(i): delete subsection (i) — A blow to the head generally only results in momentary sedation.<sup>14</sup>
- §205.259(f)(1)(ii): delete "decapitation" — For many species of fish, decapitation is unsuitable "as their body shape prevents its easy application."<sup>15</sup>
- § 205.259(f)(1)(iii): amend to read "electrocution with electrical current sufficient to achieve complete sedation."
- §205.259(f)(1)(iv): delete subsection (iv) — Use of an ice slurry, where the fish then asphyxiate "is now considered to cause unacceptable suffering since there may be a prolonged period of stress before death."<sup>16</sup> Further, in warm climates, temperature shock resulting from immersion in ice water slurry can paralyze the fish such that they appear insensible but remain conscious.<sup>17</sup>

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- §205.259(f)(2)(i): delete “except as provided in (v) above”
- §205.259(g): delete subsection (g) — Before allowing slaughter using ice or ice slurry, a scientific basis should be established for the alleged non-sentience of specific aquatic animals.

### ***Use of Fish Meal and Fish Oil***

*Will the organic consumer find the temporary 12% fish oil and fish meal allowances acceptable and what will consumer reaction be if (in a worst case scenario) certain aquaculture products no longer qualify as organic after the seven year fish oil and fish meal allowance period expires? Will it be possible for other feed ingredients or organic sources of fish oil and fish meal to be developed within this time frame to replace fish oil and fish meal from sustainable capture fisheries?*

Organic consumers will find products from aquaculture farmed fish reared on non-organic ingredients unacceptable. Since farmed fish suffer severe welfare problems when raised on nutritionally deficient diets<sup>18,19,20</sup> and since many farmed fish require fish meal and fish oil to provide a nutritionally complete and welfare-positive diet,<sup>21</sup> production of only non-carnivorous fish should be allowed under the organic standards.

### ***Sources of Fish Meal and Fish Oil***

*The Livestock Committee invites suggestions for appropriate criteria for sources of fish meal and fish oil and methods to verify that sources meet such criteria.*

Sources of non-wild organic fish meal and fish oil are rare, and wild capture methods are detrimental to the welfare of the wild-caught fish and the environment, in addition to resulting in a high incidence of by-catch.<sup>22</sup> For these reasons, if carnivorous fish are raised in aquaculture facilities, no fish meal or oil should be sourced from wild-caught fish. Fish meal and oil should only be produced from farmed sources in agreement with §205.252, Option A(h), which states:

Organic aquaculture feeds may include fish meal and oil derived from organically raised aquatic animals, providing the meal and oil is produced from fish of a different genus to the target aquaculture species being fed.

Under §205.252, Option A, subsections (e) through (g) should be deleted, with one exception. The use of “carcasses, viscera, and trimmings from the processing of wild fish and other wild seafood that are destined for human consumption” should be permitted in feed, pursuant to §205.252(g)(2) of the Aquaculture Working Group Interim Final Report.

### ***Slaughter By-products in Aquaculture Feed***

*Should by-products from processing of terrestrial organic livestock, now prohibited in feeds for organic terrestrial mammals and poultry, be allowed as ingredients in organic aquaculture feeds?*

As is the case in terrestrial organic animal agriculture, by-products from the slaughter of organic mammals and birds should be prohibited from inclusion in organic aquaculture feeds.

Although there is no evidence of transmission of prion disease to fish, this possibility cannot be dismissed entirely.<sup>23</sup> Gibbs et al. reported the presence of prion protein in the brains of spawning salmon.<sup>24</sup>

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Similarly, Suzuki et al. found a PrP-like molecule in the pufferfish, which showed structural inconsistency but high homology with mammalian PrP sequences.<sup>25,26</sup> As of 1996, concerns over possible transmissible spongiform encephalopathies led to the exclusion of all sources of animal proteins in UK-produced fish feeds other than fish meal and crustacean meal.<sup>27</sup>

Slaughter by-products in feed may also affect animal health. Comparing the results of feeding largemouth bass a commercial trout diet versus a test diet of poultry by-product meal and 12 percent blood meal, Subhadra et al. found that fish fed the test diet demonstrated lower feed consumption, feed conversion, protein efficiency, and weight gain. Furthermore, blood work on this group indicated that all measurements of fish health were diminished to some extent and that some aspects of immune response necessary for fighting disease were lower in this group.<sup>28</sup>

U.S. organic aquaculture standards should not allow inclusion of mammalian and avian slaughter by-products in feed, as there is more to learn about the transmissibility of prion disease to fish, as well as fish health and immune responses resulting from these ingredients.

Again, I thank you for this opportunity and look forward to submitting further comments to the National Organic Standards Board as it continues to develop standards for organic aquaculture.

Sincerely,



Miyun Park  
Vice President, Farm Animal Welfare

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<sup>1</sup> The Royal Society for the Prevention of Cruelty to Animals. 2006. Welfare standards for farmed Atlantic salmon. March.

<sup>2</sup> Schwedler TE and Johnson SK. 1999. Animal Welfare Information Center, United States Department of Agriculture. Animal welfare issues: responsible care and health maintenance of fish in commercial aquaculture. Animal Welfare Information Center Bulletin, Winter 10 (3-4).

<sup>3</sup> Wedermeyer GA. 1997. Effects of rearing conditions on the health and physiological quality of fish in intensive culture. In: Iwama GK, Pickering AD, Sumpter JP, and Schreck CB (eds.), Fish Stress and Health in Aquaculture, Society for Experiment Biology, Seminar Series 62. (Cambridge, UK: Cambridge University Press, pp. 35-71).

<sup>4</sup> Pickering AD. 1998. Stress responses of farmed fish. In: Black KD and Pickering AD (eds.), Biology of Farmed Fish (Sheffield, UK: Sheffield Academic Press, pp. 222-55).

<sup>5</sup> Hastein T, Scarfe AD, and Lund VL. 2005. Science-based assessment of welfare: aquatic animals. *Revue Scientifique et Technique-Office International des Epizooties* 24(2):529-47.

<sup>6</sup> Conte FS. 2004. Stress and the welfare of cultured fish. *Applied Animal Behaviour Science* 86(3-4):205-23.

<sup>7</sup> Huntingford FA, Adams C, Braithwaite VA, et al. 2006. Current issues in fish welfare. *Journal of Fish Biology* 68(2):332-72.

<sup>8</sup> United Nations Environment Programme, Global Environment Outlook. 2006. Marine Net-Pen Rearing. [www.unep.org/geo/yearbook/yb2006/070.asp](http://www.unep.org/geo/yearbook/yb2006/070.asp). Accessed October 4, 2006.

<sup>9</sup> Nash CE (ed). 2001. The net-pen salmon farming industry in the Pacific Northwest. U.S. Department of Commerce, National Oceanic and Atmospheric Administration Technical Memo NMFS-NWFSC-49. [www.nwfsc.noaa.gov/publications/techmemos/tm49/tm49.htm](http://www.nwfsc.noaa.gov/publications/techmemos/tm49/tm49.htm). Accessed October 4, 2006.

<sup>10</sup> Krkošek M, Lewis MA, Morton A, Frazer LN, and Volpe JP. 2006. Epizootics of wild fish induced by farm fish. *Proceedings of the National Academy of Sciences* 103(42):15506-10.

<sup>11</sup> United Nations Environment Programme, Global Environment Outlook, op cit.

<sup>12</sup> National Organic Standards Board Policy and Procedures Manual. 2002. NOSB principles of organic production and handling. [www.ams.usda.gov/nosb/BoardPolicyManual/BoardPolicyManual8-23-05.pdf](http://www.ams.usda.gov/nosb/BoardPolicyManual/BoardPolicyManual8-23-05.pdf). Accessed October 4, 2006.

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- <sup>13</sup> Hastein T, Scarfe AD, and Lund VL, op cit.
- <sup>14</sup> Ibid.
- <sup>15</sup> Robb DHF and Kestin SC. 2002. Methods Used to Kill Fish: Field Observations and Literature Reviewed. *Animal Welfare* 11:269-82.
- <sup>16</sup> Lines JA, Robb DH, Kestin SC, Crook SC, and Benson T. 2003. Electric stunning: a humane slaughter method for trout. *Aquacultural Engineering* 28:141-54.
- <sup>17</sup> Ibid.
- <sup>18</sup> European Commission Scientific Steering Committee. 2003. Opinion on the feeding of wild fishmeal to farmed fish and recycling of fish with regard to the risk of TSE. [www.mvo.nl/wetgeving-dierlijk-vet/onderzoek/download/SSC%20Opinion%20fishmeal%20feeding%207%203%202003.pdf](http://www.mvo.nl/wetgeving-dierlijk-vet/onderzoek/download/SSC%20Opinion%20fishmeal%20feeding%207%203%202003.pdf). Accessed October 4, 2006.
- <sup>19</sup> Huntingford FA, Adams C, Braithwaite VA, op cit.
- <sup>20</sup> De Silva SS and Anderson TA. 1995. *Fish Nutrition in Aquaculture* (London, UK: Chapman and Hall).
- <sup>21</sup> European Commission Scientific Steering Committee, op cit.
- <sup>22</sup> Huntingford FA, Adams C, Braithwaite VA, op cit.
- <sup>23</sup> European Commission Scientific Steering Committee, op cit.
- <sup>24</sup> Gibbs CJ and Bolis CL. 1997. Normal isoform of amyloid protein (PrP) in brains of spawning salmon. *Molecular Psychiatry* 2:146-7.
- <sup>25</sup> Suzuki T, Kurokawa T, Hashimoto H, and Sugiyama M. 2002. cDNA sequence and tissue expression of Fugu rubripes prion protein-like: a candidate for the teleost orthologue of tetrapod PrPs. *Biochemical and Biophysical Research Communications* 294(4):912-7.
- <sup>26</sup> European Commission Scientific Steering Committee, op cit.
- <sup>27</sup> Matthews D and Cooke BC. 2003. The potential for transmissible spongiform encephalopathies in non-ruminant livestock and fish. *Revue Scientifique et Technique-Office International des Epizooties* 22(1):283-96.
- <sup>28</sup> Subhadra B, Lochmann R, Rawles S, and Chen R. 2006. Effect of fish-meal replacement with poultry by-product meal on the growth, tissue composition and hematological parameters of largemouth bass (*Micropterus salmoides*) fed diets containing different lipids. *Aquaculture* 260:221-31. Interpretive summary at [www.ars.usda.gov/research/publications/publications.htm?seq\\_no\\_115=198479](http://www.ars.usda.gov/research/publications/publications.htm?seq_no_115=198479). Accessed October 4, 2006.